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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/560,910 | 12/16/2005 | Takeshi Inaba | Q91600 | 6082 |

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| EXAMINER | |
|---|---|
| WOOD, ELLEN S | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1782 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 06/23/2011 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/560,910 | INABA, TAKESHI | |
| | Examiner | Art Unit | |
| | ELLEN S. WOOD | 1782 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *07 October 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1 and 5-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 5-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02/03/2011*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/07/2010 has been entered.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 and 5-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blasko et al. (US 6,776,195, hereinafter “Blasko”) in view of Inaba et al. (US 6,881,460 “Inaba”).

In regards to claim 1, Blasko discloses an invention of two or more layer tubular polymeric laminates (col. 1 lines 13-12). The tubular polymeric laminate has an inner fluoropolymer layer **18** (thermoplastic resin layer), an outer nylon layer **16** (polyamide-based resin layer) (col. 3 lines 23-43). A outermost cover layer (thermoplastic polymer layer), **146**, which is formed from a first, preferably thermoplastic material (col. 9 lines

39-42). The preferred polyamide layer **16** consists of nylon 6, 6/66, 11, 12, or 6/12 (col. 6 lines 41-43). These are also the preferred polyamide layers used by the instant applicant (pg. 13 lines 11-13). The thermoplastic resin layer **18** is an ethylene based fluoropolymer (col. 6 lines 62-63), thus it would have a carbonyl functional group. The thermoplastic polymer layer **146** is a thermoplastic elastomer such as a polyurethane-based elastomer (col. 9 lines 55-66). The first layer (polyamide) is directly bonded to the second layer (fluoropolymer) through thermal "fusion" bonding (col. 5 lines 41-47 and 55-58). The first layer 16 and second layer 18 are directly bonded together without the use of intermediate tie-layer or adhesive, which allows the member 10 to be formed by continuous co-extrusion (simultaneous co-extrusion), or other extrusion such as cross-head or sequential extrusion (col. 5 lines 42-55 and fig. 1). The fusion bond or "weld" is formed between the layers 16 and 18 which generally may have a bond strength, such as a peel strength, of between about 5.25-192.6 N/cm (col. 6 lines 1-5). The thermoplastic polymer layer **146** is bonded to the inner layers by co-extrusion (col. 8 lines 57-60). Thus, the layers are laminated in order and firmly adhered to one another as claimed by the applicant. The examiner would like to note that the claim does not require that the layers are directly adhered to one another. It would be obvious to one of ordinary skill in the art at the time of the invention that if the additional resin layer is formed from the same thermoplastic material as the fluoropolymer layer it would have the same bond strength to the polyamide layer, as described by layers 16 and 18.

In regards to claim 5, Blasko discloses that the thermoplastic polymer layer **146** is selected from a thermoplastic elastomer such as a thermoplastic polyurethane elastomer (col. 9 lines 55-66).

In regards to claim 6, Blasko discloses the preferred polyamide layer consists of nylon 6, 6/66, 11, 12, or 6/12 (col. 6 lines 41-43). These are also the preferred polyamide layers used by the instant applicant (pg. 13 liens 11-13). Thus, it is known to one ordinary skill in the art that the polyamide-based resin has an acid value of not higher than 80 (equivalents/$10^6$ g).

In regards to claim 8, Blasko discloses that the thickness of the first layer (polyamide) has a thickness of between about 0.025-0.25 in (col. 5 lines 28-29) and the outermost layer (thermoplastic polymer layer) has a thickness of between about 0.02-0.15 in (col. 8 lines 61-62), thus the polyamide layer has a thickness not exceeding one fifth of the thickness of the thermoplastic polymer layer.

In regards to claim 10, Blasko discloses that the modified fluoropolymer materials are able to be fusion bonded, such as by co-extrusion, to additional layers at a temperature ranging between 150-280°C (col. 7 lines 20-25).

In regards to claims 11-12, Blasko discloses that a tube or hose is molded from the two or more layers that have been described (col. 11 lines 18-20).

In regards to claims 13-15, Blasko discloses the tubular polymeric laminate has an inner fluoropolymer layer (thermoplastic resin layer), an outer nylon layer (polyamide-based resin layer), and another resin layer (thermoplastic polymer layer) bonded directly to the fluropolymer layer (col. 3 lines 23-43). The tube or hose will

provide but chemical and environmental resistance from liquids such as fuel, organic, and inorganic solvents (col. 1 lines 21-29).

. Blasko is silent with regards to the amine value of the polyamide based resin, the modulus of elasticity in tension is lower than 400 MPa for the laminate and the total luminous transmittance. Blasko discloses that the nylon is chosen for the reasons of cost, chemical compatibility, flexural modulus, hardness, and other physical properties (col. 6 lines 39-50). Blasko discloses that to enhance the flexibility of the hose, the flexural modulus of the layers may be varied to have overall difference in flexibility (col. 9 lines 48-52). Thus, it would be obvious to one of ordinary skill in the art at the time of the invention to vary the flexural modulus of the layers of Blasko to form a laminated resin molding that has a modulus of elasticity in tension of lower than 400 MPa.

Blasko forms a multilayer laminated resin molding that has an outermost layer of polyurethane, and intermediate layer of polyamide, and an innermost layer of fluoropolymer. Thus, it would be obvious to one of ordinary skill in the art at the time of invention that the multilayer laminated resin molding would have a total luminous transmittance of not lower than 75%, because the structure is meant to be light shielding in order have exceptional resistance to chemical degradation and vapor permeation (col. 1 lines 21-22).

Blasko discloses that the preferred polyamide layer consists of nylon 6, 6/66, 11, 12, or 6/12 (col. 6 lines 41-43). These are also the preferred polyamide layers used by the instant applicant (pg. 13 lines 11-13). The hoses and tubing formed from the polymeric compositions may be formed by co-extrusion without the use of an adhesive

or tie layer (col. 3 lines 10-14). The advantages of the tubular composite structure are the enhanced resistance to internal and external chemicals and moisture (col. 3 lines 57-65). The specific nylon chosen are for reasons such as cost, service temperature, chemical compatibility with the fluid being handled, fluid, solvent, moisture or environmental resistance, flexural modulus, hardness, or other physical properties (col. 6 lines 43-50).

Inaba discloses a multilayer molding having a polyamide based resin as an outer layer and a fluorine containing resin as an inner layer (abstract). Polyamide based resin shows an unsatisfactory level of adhesion strength when the polyamide based resin has an amine value of less than 10 (equivalents/$10^6$g) (col. 4 lines 9-19). The mechanical properties of the laminates were inferior when the amine value exceeded 60 (equivalents/$10^6$g) (col. 4 lines 20-21). Thus, it was discovered that an amine value of 10 to 35 (equivalents/$10^6$g) provided the most satisfactory level of adhesion strength while maintaining mechanical properties.

Thus, it would be obvious to one of ordinary skill in the art that the polyamide based resin with the amine values as seen in Inaba would be applied to the polyamide based resin of Blasko to produce a polyamide resin with the optimal adhesion and mechanical properties in a multilayer resin molding.

### ***Response to Arguments***

4. Applicant's arguments with respect to claims 1 and 5-15 have been considered but are moot in view of the new ground(s) of rejection.

5. The examiner would like to note that the thermoplastic polymer layer **146** is considered the thermoplastic polymer layer (A) as claimed by the applicant. The claims as written do not require that the layers are directly adhered to one another. Thus, the outer thermoplastic polymer layer **146** is firmly adhered by thermal fusion bonding to the polyamide-base resin. The outer thermoplastic polymer layer **146** consists essentially of said thermoplastic polymer.

## ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELLEN S. WOOD whose telephone number is (571)270-3450. The examiner can normally be reached on M-F 730-5 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571)272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ELLEN S WOOD/
Examiner, Art Unit 1782

/Rena L. Dye/
Supervisory Patent Examiner, Art Unit 1782